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| A.1 | The student will represent verbal quantitative situations algebraically and evaluate these expressions for given replacement values of the variables. |
| A. 1 | 1. **Evaluate**  **if a = 529, x = 864, and y = -7.**  **Directions: Write your answer in the box. Your answer must be in the form of a fraction in simplest form. Use “/” for the fraction bar.**  2. **What is the value of**  **when x = -8, y = 12, and z = -3?**  **Your answer must be in the form of a fraction in simplest form**.  3. **Translate into an algebraic expression.**  **“The square root of the sum of 3p and x, less 25.”**  A  B  C  D  4. **Translate**  **into a verbal expression**.  A The sum of 2 and y plus the cube root of x.  B The product of 2 and y plus the cube of x.  C The product of 2 and y plus the cube root of x.  D The sum of 2y and x raised to the third power. |
| A.2 | The student will perform operations on polynomials, including  a) applying the laws of exponents to perform operations on expressions;  b) adding, subtracting, multiplying, and dividing polynomials; and  c) factoring completely first- and second-degree binomials and trinomials in one or two variables. Graphing calculators will be used as a tool for factoring and for confirming algebraic factorizations. |
| A.2a | 5. **Simplify the expression.**  6. **What is the simplified form of** **?**  A  C  B  D  7. **Which represents this expression in simplest form?**  A  B  C  D  8**. Which of the following results in the solution** ?    II.     1. I only B. II and III C. I, III and V D. I, V and VI |
| A.2b | 9.    10. **If the dimensions of a rectangular soccer field can be represented as (3*x* + 11) and**  **(2*x* + 3), then what is the area of the soccer field?**  A  B  C  D  11. |
| A.2c | 12**. Which of the following could represent one of the factors of the expression** **?**  A (t + 4) C (3t + 2)  B (3t – 2) D (t – 2)  13.  **Directions: Circle the factors that you want to select.**    14**. Factor completely. 2x2 – 7x – 4**  A  B )  C  D |
| A.3 | The student will express the square roots and cube roots of whole numbers and the square root of a monomial algebraic expression in simplest radical form. |
| A.3 | 15**. Written in simplest radical form,**  **is equal to** **-**  A  B  C  D  16**. What value can be placed under the radical symbol to make the statement true?**    A 35 B 245 C 875 D 1715  17. **Write in simplest radical form.**    A  B  C  D |

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| A.4 | The student will solve multistep linear and quadratic equations in two variables, including  a) solving literal equations (formulas) for a given variable;  b) justifying steps used in simplifying expressions and solving equations, using field properties and axioms of equality that are valid for the set of real numbers and its subsets;  c) solving quadratic equations algebraically and graphically;  d) solving multistep linear equations algebraically and graphically;  e) solving systems of two linear equations in two variables algebraically and graphically; and  f) solving real-world problems involving equations and systems of equations.  Graphing calculators will be used both as a primary tool in solving problems and to verify algebraic solutions. |
| A.4a | 18**. Solve the equation for p. Q = 3p + 7pw**  19**. To find the volume of a pyramid you use the formula . Which equation solves this formula for B?**  A  B  C  D |
| A.4b | 20**. Which property of real numbers justifies going from given step 3 to step 4 of the solutions shown below?**  **(given)**  **(step 1)**  **(step 2)**  **(step 3)**  **(step 4)**  A Addition Property of Equality  B Additive Inverse Property  C Distributive Property  D Division Property of Equality |
| A.4c | 21.  22**. Solve**  A C  B D  23.  **Directions: Use the grid to plot each solution. You must plot all solutions.** |
| A.4d | 24**. Michael was solving an equation and the last line of his work was 5 = 7.**  **Which statement best describes the solution to the equation Michael was solving?**  A The solution is 5.  B The solution is 7.  C There equation has infinitely many solutions.  D There equation has no solution.  25**. What is the solution of the equation**  **?**  A  B  C  D  26**. What is the solution to the equation** 12(c + 3) = 12c + 36?  ***x***  ***y***  27.  **From the list of ordered pairs provided, determine all possible pairs that are solutions of the linear equation *y* = -2*x* + 4.**  ***H* (0, 4) *M* (3, 2) *N* (-3, 6) *P* (-2, 8) *T* (1, 2) *X* (5, -4)** |
| A.4e | 28**. Find the x-value of the solution for the system of equations shown.**    A -5  B -4  C 2  D 7  29**. What is the solution of the following system of equations?**      A  B  C  D |
| A.4f | 30. **Sean and his sister have a combined weekly salary of $191. If Sean’s weekly pay is $7 less than twice his sister’s, which equation can be used to determine his sister’s salary?**  A x - (2x - 7) = 191  B x + (7 - 2x) = 191  C x + 191 = 2x - 7  Dx + (2x - 7) = 191 |
| A.5 | The student will solve multistep linear inequalities in two variables, including  a) solving multistep linear inequalities algebraically and graphically;  b) justifying steps used in solving inequalities, using axioms of inequality and properties of order that are valid for the set of real numbers and its subsets;  c) solving real-world problems involving inequalities; and  d) solving systems of inequalities. |
| A.5a | 31.  **Directions: Write an inequality in the box. Use < or > for the inequality sign.**    32**. Solve:**  A  B x > -7 C x < -7 D |
| A.5b | 33.    **Directions: Choose a property that justifies the work between Step 4 and Step 5.** |
| A.5c | 34. |
| A.5d | 35**. Select all ordered pairs that are solutions to the system of linear inequalities defined by** .   |  |  |  | | --- | --- | --- | | A (1, -3) | B (6, -2) | C (2, 0) | | D (5, 1) | E (3, 3) | F (0, 4) |     36.  **Directions: Circle two inequalities from the choices provided that could be represented by the graph.**    37.  **Directions: Shade the numbered region which represents the solution set to the system of inequalities.** |
| A.6 | The student will graph linear equations and linear inequalities in two variables, including  a) determining the slope of a line when given an equation of the line, the graph of the line, or two points on the line. Slope will be described as rate of change and will be positive, negative, zero, or undefined; and  b) writing the equation of a line when given the graph of the line, two points on the line, or the slope and a point on the line. |
| A.6a  **Directions: Use the grid to plot two points. The coordinates of the points must be integers.** | 38. **Find the slope of line passing through P (1,1) and Q (5,4).**  A  C  B - D -  39**. What is the slope of the line 5x + 8y = 32?**  A  C  B  D  40.    41. |
| A.6b | 42**. What is the equation of the line passing through the points (6, 7) and (-2, -5)?**  43**. A line passes through the point (-3, 2) and has a slope of**  **. Which of the following points also lies on this line?**  A (-2, 5)  B (5, 6)  C (-9, 1)  D (6, 5)  44**. Which is the equation of the line with slope and y-intercept of -4?**  A  B  C  D |
| A.7 | The student will investigate and analyze function (linear and quadratic) families and their characteristics both algebraically and graphically, including  a) determining whether a relation is a function;  b) domain and range;  c) zeros of a function;  d) *x*- and *y*-intercepts;  e) finding the values of a function for elements in its domain; and  f) making connections between and among multiple representations of functions including concrete, verbal, numeric, graphic, and algebraic. |
| A.7a | 45**. Given the relation *B* = {(4, 3), (5, 8), (9, 7), (*x*, 5)}. Which of the following values for *x* will make the relation *B* a function?**  A 4  B 5  C 7  D 9 |
| A.7b | 46.  **What is the domain of the function graphed?**  A  C  B  D  47. |
| A.7c | 48.  **Directions: Choose each function that has exactly one zero. You must choose all correct functions.** |
| A.7d | 49**. What are the x- and y-intercepts of ?**  A x-intercept: (3.5, 0) , y-intercept: (0, -7)  B x-intercept: (-1.75, 0) , y-intercept: (0, 3.5)  C x-intercept: (3.5, 0) , y-intercept: (0, -1.75)  D x-intercept: (2, 0), y-intercept: (0, -4)      50.    **Directions: Choose each function that has an x-intercept of 3. You must choose all correct functions.** |
| A.7e | 51**. If , then what is**  ?  A C  B D  52**. If****, what is****?**  A 19  B 3  C -9  D -25 |
| A.7f | 53.  54.  **Directions: Use the grid to plot three points that are represented by the rule provided. The coordinates of the points must be integers.**  **A function is represented by this rule.**  **Three more than square of a number x is y.** |
| A.8 | The student, given a situation in a real-world context, will analyze a relation to determine whether a direct or inverse variation exists, and represent a direct variation algebraically and graphically and an inverse variation algebraically. |
| A.8 | 55**. Which of the following relations represents an inverse variation?**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | *x* | 6 | 4 | 3 | -2 | | *y* | 36 | 24 | 18 | -12 |   A       |  |  |  |  |  | | --- | --- | --- | --- | --- | | *x* | 2 | 3 | 4 | -6 | | *y* | 18 | 12 | 9 | -6 |   B         |  |  |  |  |  | | --- | --- | --- | --- | --- | | *x* | 2 | 5 | 8 | 10 | | *y* | 5 | 8 | 11 | 13 |   C   |  |  |  |  |  | | --- | --- | --- | --- | --- | | *x* | -6 | -4 | 5 | 15 | | *y* | 18 | 12 | -15 | -45 |   D    56**. At a given time and place, the height of an object varies directly as the length of its shadow. If a flagpole 6 meters high casts a shadow 10 meters long, find the height of a building that casts a shadow 45 meters long.**  A 24 meters C 75 meters  B 27 meters D meters  57.    58.  **Directions: Use the grid to plot two points. The coordinates of the points must be integers.** |
| A.9 | The student, given a set of data, will interpret variation in real-world contexts and calculate and interpret mean absolute deviation, standard deviation, and z-scores. |
| A.9 | 59.    60.  61.  63.  62.  **Directions: Write your answer in the box. Your answer must be in decimal form, rounded to the nearest hundredth. Use “.” for the decimal point.**  **Directions: Circle all numbers that you would like to select. Only circle the correct numbers.** |
| A.10 | The student will compare and contrast multiple univariate data sets, using box-and-whisker plots. |
| A.10 | 64**. The box-and-whisker plot shows the number of hours spent on the internet in a week by male and female students in a chorus class.**  **Male Students**  **Female Students**     * **There are 20 male students in the chorus class.** * **There are 32 female students in the chorus class.**   **What is the total number of students that spend fewer than 8 hours a week on the internet?**  A 39  B 16  C 13  D 9  65. |
| A.11 | The student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions, and solve real-world problems, using mathematical models. Mathematical models will include linear and quadratic functions. |
| A.11 | 66.  A  C  B  D  67**. Bill rode his bike to a store 5 kilometers from his house. The table shows the distance from the store paired with the number of minutes after leaving his house. Which curve of best fit bests represents the data in the table?**   |  |  | | --- | --- | | Minutes  (x) | Kilometers from Store (y) | | 0 | 5 | | 3 | 4 | | 5 | 3.2 | | 8 | 1.9 |   A C  B D |